

# Water Quality Management and Compliance

RWSP reporting policies call for including in RWSP annual reports a summary of the Wastewater Treatment Division's water quality management programs and its compliance with the Endangered Species Act and with other agency regulations and agreements.

The Wastewater Treatment Division (WTD) manages several programs to protect and preserve water quality. On average, its three secondary treatment plants process over 180 million gallons of wastewater each day. The quality of treated effluent from these plants remained high in 2005. Effluent values were typically far below the limits set in the wastewater discharge permits. Close to half of King County's combined sewer overflow (CSO) locations are now "controlled," meaning that they meet the Washington State regulation of no more than one untreated discharge per year. WTD has committed to controlling its remaining CSO locations by 2030.

The best way to protect our waterways is to control pollutants at their sources. Two programs work to prevent pollutants from reaching King County treatment plants—the Industrial Waste Program and the Local Hazardous Waste Management Program. Among other achievements, these programs have helped to reduce the level of mercury in biosolids by 50 percent from levels in 2000. WTD also recovers its treatment plant byproducts for beneficial uses. It recycles 100 percent of its biosolids, produces reclaimed water for reuse in treatment plant operations and for customers in the service area, and recovers methane (digester gas) to generate energy for running plant operations and for sale to local utilities.

This chapter reports on WTD water quality management and compliance activities in 2005. Detailed information on the 2005 results of the county's water quality monitoring program is included as Appendix D.

## 11.1 Wastewater Treatment Plant Capacity, Flows, and NPDES Compliance

WTD's two regional wastewater treatment plants (the South Plant and West Point Plant) and the Vashon Plant continue to be in compliance with the terms and conditions of their NPDES<sup>1</sup> (National Pollution Discharge Elimination System) permits, and so are in compliance with the

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<sup>1</sup> NPDES permits are issued by the Washington State Department of Ecology and set limits on the quality and quantity of effluent (treated wastewater) discharged from point sources such as treatment plants, CSOs, and industrial facilities.

Washington State Water Pollution Control Law, the Federal Water Pollution Control Act, and the Federal Clean Water Act.

### 11.1.1 South Treatment Plant

The South Treatment Plant is located on Monster Road in Renton. It provides secondary treatment for wastewater flows from customers in the lower Green River basin, suburban cities east of Lake Washington, and Seattle's Rainier Valley, in addition to flows from parts of Snohomish and Pierce Counties. The South Plant also treats about 20 million gallons (MG) per year of septic tank solids from throughout the region as well as sludge from treatment facilities in neighboring areas such as Snoqualmie Valley cities and Vashon Island. The plant currently holds the National Association of Clean Water Agencies (NACWA) Gold Award for excellent operation.

The South Treatment Plant is designed to manage an average monthly wet-weather flow of 115 million gallons per day (mgd). The effluent pumping capacity at the plant was recently upgraded to handle a peak flow of 325 mgd. The outfall in Puget Sound discharges secondary effluent 10,000 feet from shore at a depth of 600 feet into the denser deeper water layer. The increasingly diluted effluent plume moves southward in the Sound, remaining at or below a depth of 390 feet.

Despite the fluctuation of flow volumes and influent composition, the South Plant's secondary treatment process consistently produces high quality secondary effluent. In 2005, the plant managed an average wet-weather flow of 83 mgd and a maximum monthly flow of about 91 mgd.<sup>2,3</sup> Treatment efficiency remained high and consistent. The plant experienced seven exceptions to the Class A reclaimed water permit limits, one in May and six in September.<sup>4</sup> The reclaimed water exceptions resulted from higher-than-permitted fecal coliform counts that resulted in temporary interruption of reclaimed water distribution.

### 11.1.2 West Point Treatment Plant

The West Point Treatment Plant is located on the shore of Puget Sound in Seattle's Discovery Park. It provides secondary treatment for wastewater from customers located in the greater Seattle area and in southwest Snohomish County. West Point is the largest plant in the King County system. This plant is designed to manage an average non-storm wet-weather flow of

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<sup>2</sup> For the South and Vashon plants, the average wet-weather flow (AWWF) is the average flow during the wet season, between November and April, on days when no rainfall has occurred on the previous day. For the West Point plant, the "non-storm" AWWF is calculated without counting the flow on days when it rains or the days immediately following a rain event. For purposes of this report, the months of January through April and November and December were used to calculate AWWF for the calendar year 2005.

<sup>3</sup> Maximum monthly flow is the average of daily flows for the month with the highest total flow.

<sup>4</sup> "Class A Reclaimed Water" is reclaimed water that, at a minimum, is at all times an oxidized, coagulated, filtered, and disinfected wastewater. Allowed end uses of Class A reclaimed water are irrigation of food and non-food crops and irrigation of open access areas, such as parks. The water could also be used for industrial cooling and process water and other non-drinking-water (non-potable) uses.

133 mgd and a peak wet-weather flow of 440 mgd. After treatment, the secondary effluent is discharged through an outfall to Puget Sound. The outfall discharges 3,650 feet from shore at a depth of 240 feet. The increasingly dilute effluent plume flows northward most of the year, out of Puget Sound. The West Point Plant also currently holds the NACWA Gold Award for excellent operation.

The West Point Plant is designed to provide secondary treatment for up to 300 mgd. Capacity between the 300-mgd capacity for secondary treatment and the 440-mgd peak capacity is used to manage captured CSO flows. After receiving CSO treatment (equivalent to primary treatment), these flows are mixed with secondary effluent for disinfection, dechlorination, and discharge at the deep marine outfall. The resulting effluent must meet secondary effluent quality limits.

The average non-storm wet-weather flow in 2005 through the West Point Treatment Plant was about 79 mgd with a maximum monthly flow of 91 mgd. No permit limit violations occurred in 2005. There were three episodes when a small volume of flow was diverted around secondary treatment because of mechanical problems. The flow was blended with fully treated effluent. The discharged blended effluent stayed within permit limitations.

### 11.1.3 Vashon Treatment Plant

The Vashon Treatment Plant is located on the east side of the Vashon Island, northeast of the unincorporated Town of Vashon. This secondary treatment plant was constructed in 1975 and operated by the Vashon Sewer District until 1999, when King County assumed responsibility for the plant. The plant is designed to manage a monthly average flow of 0.264 mgd and a peak flow of approximately 1.0 mgd. After secondary treatment and disinfection, the effluent is discharged through an outfall to Puget Sound. The outfall discharges 2,900 feet offshore at a depth of -200 feet mean lower low water (MLLW).

In the past, this treatment plant had frequent NPDES permit violations. Since King County assumed responsibility for plant operations and facilities, many improvements have been made to allow the plant to operate more consistently with far fewer violations. Improvements included removal of hydraulic restrictions in the outfall line to increase its peak-flow handling capacity, addition of a new ultraviolet disinfection process, improvement of sludge handling processes, and enhancement of the electrical and water utilities.

To ensure that the plant meets all permit limits in the future, construction began in 2004 on a new higher-capacity treatment plant with added backup systems. Construction is expected to be complete by late 2006. (See Chapter 6 for more information on the upgrades to the Vashon Treatment Plant.)

The average wet-weather flow at the Vashon plant in 2005 was 0.128 mgd with a maximum monthly flow of 0.171 mgd. There were two NPDES permit exceptions in 2005, one for weekly average total suspended solids and one for weekly fecal coliform bacteria. Three minor overflows of treated effluent occurred. Two were construction-related events. In all cases, the effluent was contained before reaching a water body.

WTD also owns and operates the Beulah Park/Cove Treatment Facility on Vashon Island. This facility began operating in November 2001 and received its first State Waste Discharge permit from The Washington State Department of Ecology (Ecology) on October 31, 2005. It collects wastewater from approximately 60 residences via a vacuum system and pump station; treats the wastewater with a series of septic tanks, recirculating sand filters, and ultraviolet disinfection; and then pumps the effluent to a drip field for percolation to subsurface soils. Before the treatment facility was constructed, the Washington State Department of Health declared the Beulah Park and Cove area a “severe public health hazard area.”

## 11.2 Sanitary Sewer Overflow Prevention and Containment

Sanitary sewer overflows (SSOs) are discharges of wastewater from separated sewer systems and also from combined systems when no rain is occurring. SSOs can flow from manholes, broken pipes, or pump stations to city streets, water bodies, and basements. SSOs occur on rare occasions, typically during extreme storm events and power outages. Minimizing the discharge of untreated wastewater is fundamental to WTD’s mission. Extensive resources have been committed to maintaining the integrity of the system and preventing SSOs. WTD’s Maintenance and Asset Management groups maintain a regular schedule of inspection, maintenance, and repair to prevent mechanical failures and SSOs.

Table 11-1 shows that King County reported 10 SSOs in 2005, which is below the annual average of 15 (based on averages over a 15-year period). Three of the SSOs were diversions around secondary treatment during dry weather that were blended and discharged with other treated effluent into Puget Sound. One SSO flowed into the Sammamish River. The other five events were contained on land before reaching any water body. The overflows ranged in size from 20 gallons to 73 MG. While there is some short-term risk to public health and the environment from SSOs, there are no long-term effects from this volume of release. In all cases, WTD overflow response procedures were implemented. These procedures include posting the area, cleaning up the area as appropriate, and monitoring water quality in the vicinity of the overflow to determine when pollutant concentrations have returned to levels consistent with state Water Quality Standards.

**Table 11-1. Sanitary Sewer Overflows in 2005**

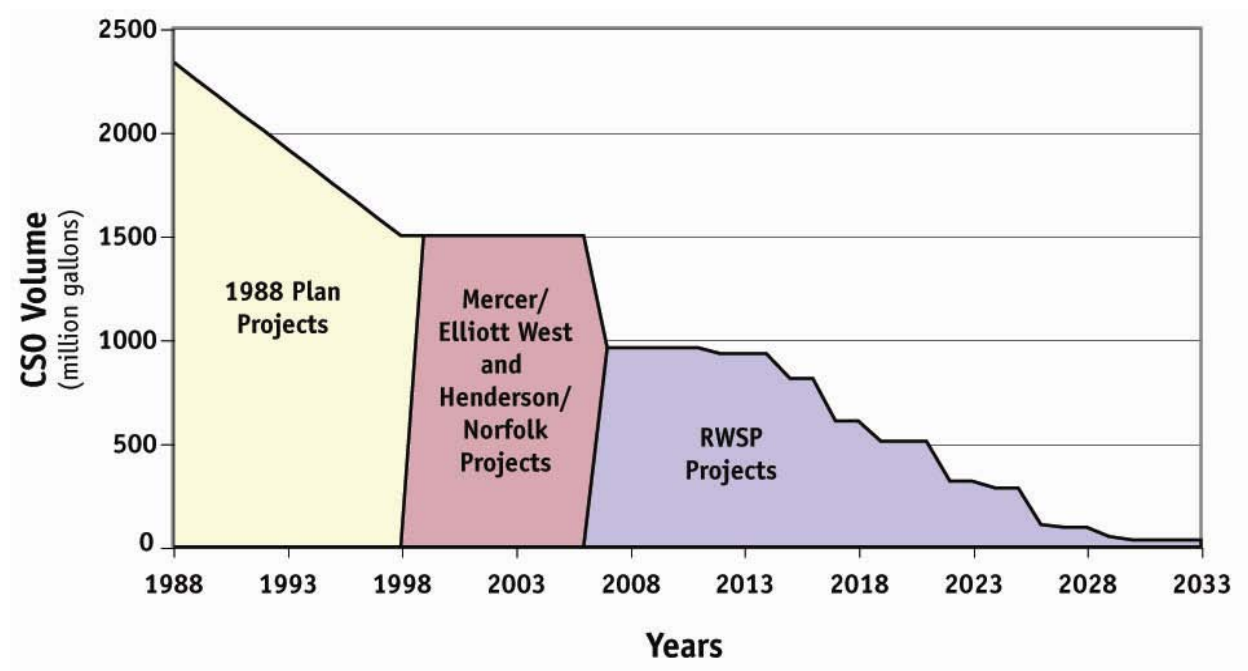
Date	Location	Estimated Volume (gallons)	Duration	Discharge Type	Receiving Water	Reason for Overflow
Feb. 10	West Point	73,800,000	3 minutes	Partially treated wastewater	Puget Sound	Digester cleaning
Feb. 20	Bunker Trail Pump Station 2 (Vashon)	20	About 2 days	Untreated wastewater	Uncertain whether the wastewater entered a water body	Equipment failure
May 31	Woodinville Pump Station	12,500	6 minutes	Untreated wastewater	Sammamish River	Power failure
June 1	Bunker Trail Pump Station 2 (Vashon)	10–100	About 2 days	Untreated wastewater	No discharge to a water body	Equipment failure resulting from lightning
June 21	West Point	760,000	14 minutes	Partially treated wastewater	Diversion around secondary and blended with fully treated effluent	Power failure resulting from lightning
June 26–27	Vashon Treatment Plant	1,000–2,000	9 hours	Treated wastewater	Contained in the construction trench and did not reach the creek or Puget Sound	Operator error
Sept. 26	Vashon Treatment Plant	1,500	< 60 minutes	Treated and disinfected wastewater	Contained in the construction trench and did not reach the creek or Puget Sound	Related to construction
Oct. 6	Vashon Treatment Plant	120	Unknown	Treated and disinfected wastewater	Contained in the construction trench and did not reach the creek or Puget Sound	Crack in existing outfall line discovered during construction of new line
Nov. 8	West Point	180,000	5 minutes	Treated and disinfected wastewater	Diversion around secondary and blended with fully treated effluent	Equipment failure
Dec. 15	West Point	< 100,000	< 3 minutes	Partially treated wastewater	Diversion around secondary and blended with fully treated effluent	Equipment failure

## 11.3 Combined Sewer Overflow Reduction

King County began to develop plans for controlling CSOs as early as 1979, after treatment plants and conveyance lines were in place. By May 2005, with completion of the projects specified in the 1988 CSO plan and the Mercer/Elliott West and Henderson/Norfolk facilities, about 17 of King County's 38 CSOs were controlled to the Washington State standard of an average of no more than one untreated discharge per year per outfall.<sup>5</sup> The remaining 21 uncontrolled CSOs will meet state standards as projects are completed between 2012 and 2030. Strategies for reducing CSOs include pollution prevention through source control, operational controls, upgrade of existing facilities, and construction of new facilities to provide storage and treatment

<sup>5</sup> An update and calibration of the hydraulic model, expected to be ready in 2007, will help to verify the control status of King County CSOs.

of excess flows prior to discharge. Figure 11-1 shows the estimated CSO reduction from 1988 through completion of the RWSP projects in 2030.



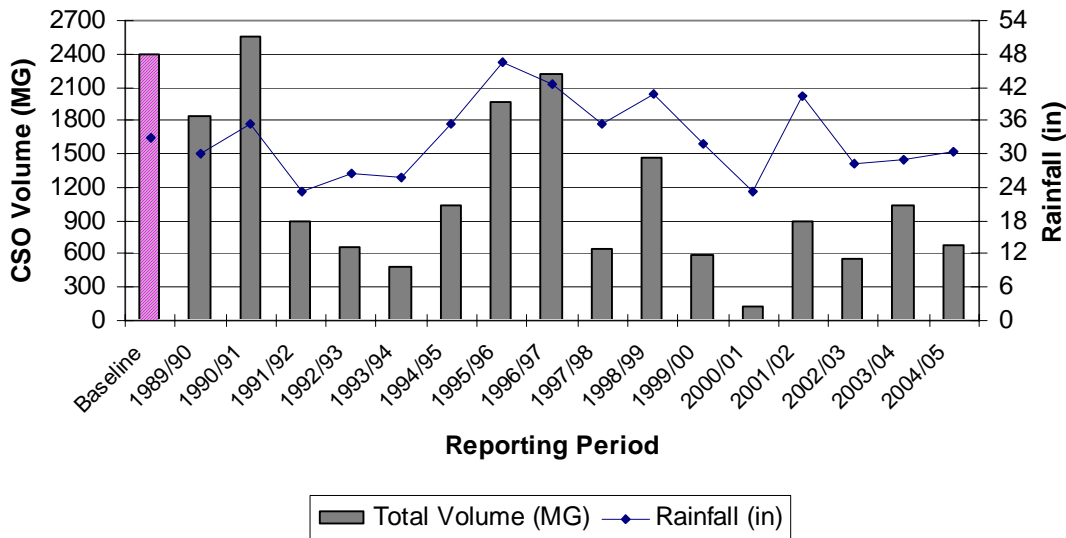
**Figure 11-1. Actual and Planned CSO Reduction, 1988–2030**

### 11.3.1 Frequencies and Volumes of Untreated CSOs

King County reports CSO data beginning in June of one year and ending in May of the next year. As shown in Figure 11-2, there is a pattern of decreasing volumes of untreated CSOs over time despite fluctuations in rainfall from year to year.<sup>6</sup>

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<sup>6</sup> More information about specific CSOs can be found in the *Combined Sewer Overflow Program 2004–2005 Annual Report* at <http://dnr.metrokc.gov/wtd/cso/2004-05-intro.htm>.



**Figure 11-2. Annual CSO Volumes—1989 through 2005**

Using Ecology’s 24-hour inter-event interval definition of a CSO event, the total number of untreated CSO events in 2004–2005 was 198, with total volume of 702.50 MG. Of these events, 46 occurred in West Point’s North Service Area, 138 occurred in West Point’s South Service Area, and 14 occurred in the Alki Service Area. These numbers are approximately 54 percent lower than the baseline estimated in 1981–1983.

### 11.3.2 Frequencies and Volumes of Treated CSOs

For the 2004–2005 CSO year, there were 19 occurrences, totaling 351.78 MG, of treated CSO discharges from the West Point Treatment Plant.

In 2005, the pumping capacity of the Carkeek Pump Station was upgraded from 8.4 mgd to 9.2 mgd. This higher capacity raises the volume of flows conveyed to West Point and decreases the volume of flow to the Carkeek CSO Treatment Plant. The Carkeek plant had been exceeding NPDES permit limits for frequency and volume because the local service area was sending more flow to the plant than was expected when the plant was designed. For the 2004–2005 CSO year, there were four occurrences, totaling 4.04 MG, of treated CSO discharges from the Carkeek plant.

The Alki CSO Treatment Plant discharged treated CSOs only one time in 2004–2005, with a total volume of 20.4 MG. The West Seattle Tunnel, completed in 1998, has allowed much of the flow intended for the Alki plant to go to West Point via the Elliott Bay Interceptor. This increased transfer of Alki area flows to West Point has resulted in occasional permit compliance problems at the Alki CSO Treatment Plant. The plant now operates on average only two times per year. These events occur under the largest storms and so are the most dilute and difficult to

treat. Discussions with Ecology regarding permit requirements for the Alki plant are scheduled to begin soon.

See Chapter 5 for more information on the county's CSO Control Program.

## 11.4 Pollution Source Control

King County operates two source control programs: the Industrial Waste Program and the Local Hazardous Waste Management Program. Both programs work to control pollutants at their source, thereby keeping them out of the wastewater system and, in turn, out of surface waters and the environment. The two programs complement each other. The Industrial Waste Program focuses on larger businesses in a regulatory manner, issuing permits and discharge authorizations under a federally mandated pretreatment program. The Local Hazardous Waste Management Program focuses on smaller businesses and on households in a non-regulatory manner, providing technical assistance, resources, and education under a state-mandated program.

### 11.4.1 Industrial Waste Program

#### 11.4.1.1 Permits, Authorizations, and Enforcement

The Industrial Waste Program (IWP) regulates industrial wastewater discharged into the King County wastewater system. The purpose of these activities is to ensure that industries treat wastewater for harmful substances such as metals, oils, acids, flammables, organic compounds, gases, and solids before discharging the wastewater to sewers. This program protects surface water and biosolids quality, the environment, public health, and the wastewater system and its workers.

IWP may regulate any industry, from largest to smallest, if the industry discharges to the wastewater system. To do this, the program issues two main kinds of discharge approvals: permits and discharge authorizations. Discharge authorizations are issued to smaller industries. Permits are issued to industries that discharge more than 25,000 gallons per day and/or that are included in federally regulated categories. The Environmental Protection Agency (EPA) requires at least 20 categories of industries to get permits, whatever their size or quantity of wastewater. Permits have more comprehensive operating and self-monitoring requirements than discharge authorizations.

IWP investigators inspect facilities before issuing discharge approvals and also inspect those with approvals to see that they are complying with regulations. Most companies are required to self-monitor their discharges. Industrial waste specialists take verification samples at facilities with permits to see whether wastewater discharges comply with regulations. If they find violations, the specialists conduct follow-up inspections and sampling.

The program issues a Notice of Violation when a company discharges more contaminants or volume than allowed, violates conditions of its discharge approval, or fails to submit required



reports. For enforcement, IWP uses tools such as compliance schedules, fines, charges for monitoring and inspections, and cost recovery for damages.

In 2005, 129 permits and 288 industrial waste discharge authorizations were in effect and 435 inspections were conducted. Table 11-2 shows the number of compliance samples collected versus the number of violations detected. During 2005, Notices of Violation for 90 violations were issued to 37 companies. Several companies had multiple violations in more than one category. The violations were as follows:

- 24 companies had 73 discharge violations
- 7 companies had 7 permit/code violations
- 8 companies had 10 reporting violations

The company with the most violations (38) was Puget Sound Recycling, a centralized waste treatment facility in Auburn. IWP issued six fines in 2005, totaling \$27,969. The largest fine (\$23,894) was issued to Argent Chemical Laboratories located in Redmond. None of the violations caused NPDES exceptions at King County wastewater treatment plants.

**Table 11-2. Number of Discharge Compliance Samples and Discharge Violations in 2005**

Parameter	Compliance Samples	Post-Violation	Discharge Violations
Cyanide			
Total cyanide	164	2	
Cyanide amenable to chlorination	26		
Metals	488	16	28
Organics			
BNA	65		12
VOA	223		4
Fats, oils, and grease (FOG)			
Total	0		
Polar <sup>a</sup>	38		
Non-polar	352		1
pH (field) <sup>b</sup>	632	1	
Surcharge	227		

Note: The information in this table will appear in the 2005 annual pretreatment report.

<sup>a</sup> The visual free-floating fats, oils, and grease (FOG) test was used to assess the presence of polar (animal-vegetable) FOG. No laboratory analyses were done.

<sup>b</sup> The number of pH samples is somewhat misleading because it shows only discrete pH samples collected and analyzed in the field, not readings from continuous pH measurement.

#### 11.4.1.2 Lower Duwamish Waterway Source Control Project

Since 2002, the Industrial Waste Program has been working on the Lower Duwamish Waterway (LDW) Source Control Project in support of the WTD's Sediment Management Program. Its purpose is to coordinate with sediment cleanup efforts and to identify and manage sources of chemicals that reach site sediments. Its goals are to minimize the potential for chemicals in

sediments to exceed the state's Sediment Management Standards (WAC 173-204) and the LDW sediment cleanup goals.

Over 1,000 inspections of businesses have been completed in the LDW basin. In 2005, IWP investigators worked with Seattle Public Utilities (SPU) inspectors to conduct initial and follow-up inspections in the Diagonal Avenue South CSO/storm drain service area, the Norfolk basins, the Slip 4 early action cleanup site basin, and other areas draining to the former Slip 5 and Slip 6. As observed in previous years, the most common problems noted during these inspections are associated with stormwater source control and spill prevention and planning. (See Chapter 5 for more information on the Sediment Management Program and Lower Duwamish Waterway cleanup efforts.)

### 11.4.1.3 Categorical Pretreatment Regulation

During 2005, two noteworthy events occurred in the categorical pretreatment standard arena. In August, EPA issued a Notice of Availability of the *Preliminary Effluent Guidelines Plan for 2006*, and in October, it published the Final Pretreatment Streamlining Rule.

IWP submitted comments on the *Preliminary Effluent Guidelines Plan for 2006*. IWP supports EPA's findings that four of the seven industrial sectors being considered for categorical standards do not need these standards.<sup>7</sup> These industries do not have pass-through potential (pollutants will not pass through the treatment plant and enter receiving waters) and are adequately regulated by IWP's local limits. IWP expressed concern about the possibility that EPA would promulgate categorical standards for the health services industry and noted that IWP has already developed effective rules for two of the health service sectors: dental practices and large hospitals. EPA is going to conduct studies on the health industries.

The long-awaited *Final Pretreatment Streamlining Rule* became effective on November 14, 2005. The lengthy and complex rule covers 11 major areas of the General Pretreatment Regulations. The changes in the rule have the potential to reduce the costs for both regulatory agencies, such as IWP, and the regulated community. While some of these changes were effective immediately, others will require an ordinance change before they can be enacted. IWP staff will be working on enacting these changes to ordinance and procedures in 2006.

### 11.4.1.4 Dental Waste Program

The Dental Waste Program allows dentists to demonstrate that they are complying with local mercury limits without having to sample their wastewater and submit periodic self-monitoring reports. To comply, dentists must install an approved pretreatment unit commonly known as an amalgam separator unit. IWP staff performs random inspections of dental offices and monitor the levels of mercury in biosolids produced at the wastewater treatment plants.

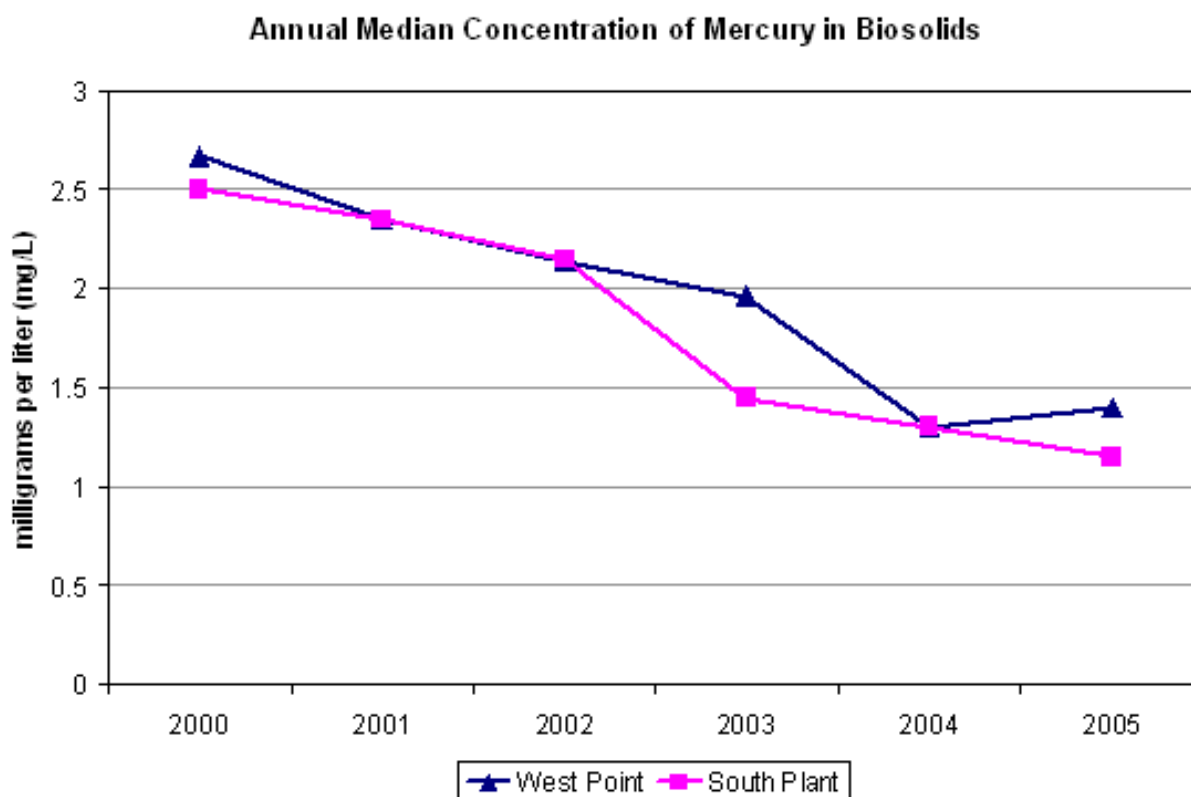
This program, in conjunction with programs implemented by the Local Hazardous Waste Management Program, has reduced the annual median concentrations of mercury in King County

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<sup>7</sup> Categorical standards require industries to obtain discharge permits. The four industries are food services, industrial laundries, photo processing, and printing and publishing.

biosolids. In 2004—the year in which dental practices achieved a 97-percent compliance rate—mercury levels in biosolids were approximately 50 percent lower than the levels in 2000, the year before King County began implementing the Dental Waste Program (Figure 11-3). The decline leveled out in 2005.

In 2005, approximately 75 dental offices were inspected. Only three of the offices were out of compliance and needed to install or maintain the appropriate pretreatment devices. Other activities in 2005 include (1) revision of the Dental Wastewater Fact Sheet used by dentists to determine what they need to do to comply with King County mercury limits and (2) continued participation in a national NACWA study of mercury concentrations in treatment plant influent, effluent, and biosolids.



**Figure 11-3. Decline of Mercury Concentrations in Biosolids, 2000 through 2005**

#### 11.4.1.5 Permitting Guidelines Project for the Biotechnology Industry

In 2005, the Industrial Waste Program evaluated the area's biotechnology industry to assess the need to develop a streamlined permitting process to assist biotechnology facilities in meeting local, state, and federal discharge regulations.

IWP staff convened a focus group consisting of representatives from local biotechnology industries and consultants. The group discussed the activities, processes, and operations that could generate industrial and hazardous wastes. With the help of the focus group, IWP developed a survey that was sent to biotechnology operations located in King County's wastewater service area. Following receipt of completed surveys, IWP conducted inspections at a number of biotechnology operations to learn more about their specific activities, operations, and waste streams discharged to sewers.

Using the information learned from the focus group, surveys, and inspections, IWP staff developed draft permitting guidelines for the biotechnology industry. Following a public review and comment period, these permitting guidelines will be implemented in 2006.

For more information, visit the Industrial Waste Program's Web site at <http://dnr.metrokc.gov/wlr/indwaste/index.htm>

### 11.4.2 Local Hazardous Waste Management Program

The Local Hazardous Waste Management Program (LHWMP) is a consortium of the King County Department of Natural Resources and Parks (the Water and Land Resources Division and the Solid Waste Division), the City of Seattle (Seattle Public Utilities), Public Health–Seattle & King County, and the Suburban Cities Association. The program provides technical assistance, reimbursement, and recognition to businesses that generate small quantities of hazardous waste. It also provides collection services for household hazardous wastes as well as public education aimed at proper handling and reduction in use of hazardous household products.

#### 11.4.2.1 Small Business Incentive Program

EnviroStars, a service of the Local Hazardous Waste Management Program, is a program that certifies businesses for their efforts in preventing pollution and reducing hazardous waste. Certified EnviroStars businesses are given a two-to-five-star rating based on their commitment to reducing hazardous waste. The higher the star rating, the more proactive the business has been in protecting the environment. It is estimated that over time the program has helped reduce by 650 tons the amount of hazardous waste generated by dry cleaners and auto shops in a five-county area. The program brings benefit not only to the environment but also to the businesses themselves by improving employee morale and increasing the customer base. In 2005, the program added 39 King County businesses to its roster, bringing the total in the county to 354 businesses. Also during the year, 112 certifications were renewed. Renewals ensure that businesses continue to meet standards and learn of new waste-reducing and sustainable opportunities.

The Voucher Incentive Program helps businesses to better manage their hazardous materials by matching their investment in new technologies, in appropriate storage or containment systems, in testing of questionable wastes, and in disposal of hazardous wastes. Businesses can receive up to \$500 per site. Through this incentive program, businesses have invested approximately \$3 for every \$1 spent by the program. In 2005, the program reimbursed approximately \$140,000 to more than 380 businesses.

### **11.4.2.2 Mercury Reduction**

The Local Hazardous Waste Management Program focuses much of its attention on reducing the risk from use and disposal of mercury-containing consumer products. Mercury was once used extensively in thermometers, barometers, manometers, electrical switches, and novelty items. It is still widely used in dental amalgam. Fortunately, there are effective non-mercury alternatives for most of these applications. Two examples of where LHWMP incentive and education efforts have helped to reduce mercury in the environment are in the areas of disposal of dental amalgam and recycling of fluorescent light tubes.

About half of the metal in dental amalgam, the silvery material used to fill cavities in teeth, is mercury. An estimated 300,000 amalgam fillings (representing more than 250 pounds of mercury) are replaced each year by King County dentists. In 2005, the quantity of mercury in county biosolids continued at the dramatic low level achieved in 2004, reflecting the reduction in mercury dental amalgam disposed of down the drain and into sewers. (See Figure 11-3 in the Industrial Waste Program discussion earlier in this chapter.)

LHWMP has worked with dentists for many years to help them prepare for installing and using amalgam separator units. A local dentist and a vendor designed amalgam separator units based on an LHWMP-created model. LHWMP tested the units at the University of Washington school of dentistry, did education/outreach, and proposed a regulation. LHWMP continues working with dentists through its incentive programs. In 2005, two more dentists joined the EnviroStars ranks, increasing the total to 142 EnviroStars-certified dentists in the region. Nine dentists received a total of \$4,200 reimbursement from the Voucher Incentive Program for purchase of amalgam separators. Following King County's lead, neighboring counties have also starting working with their dentists.

Between 3.5 and 6.5 million fluorescent lamps, containing 132 to 321 pounds of mercury, are disposed of in King County each year. An estimated 37 percent of the mercury is recycled. In 2005, approximately 1.2 million lamps were recycled as the result of education and incentives provided by LHWMP to businesses and others.

### **11.4.2.3 Household Hazardous Waste Collection**

In 2005, more than 80,000 customers used Local Hazardous Waste Management Program facilities or services to dispose of more than 1,800 tons of household hazardous waste. Approximately 17,000 customers disposed of more than 520 tons of household hazardous waste at Seattle's fixed facilities and more than 37,000 customers disposed of more than 660 tons at the Wastemobile and 450 tons at the Factoria Transfer Station. Were it not for LHWMP's collection services, much of this waste could have ended up in regional landfills, sewers, storm drains, and the environment.

For more information, visit the Local Hazardous Waste Management Program's Web site at <http://www.govlink.org/hazwaste/about/>

## 11.5 Compliance with the Endangered Species Act

### 11.5.1 Habitat Conservation Plan

Because of the listing of chinook salmon and bull trout as “threatened” and the Orca as “endangered” under the Endangered Species Act (ESA), projects that need a federal permit must go through an ESA Section 7 consultation process with NOAA Fisheries and U.S. Fish and Wildlife Services (“the Services”). To meet these requirements on a programmatic level, WTD undertook the creation of a Habitat Conservation Plan (HCP) for all WTD activities that have the potential to impact the listed species. The HCP was proposed as a voluntary two-phased 40-year agreement with the Services that would outline WTD’s efforts to protect threatened and endangered species while carrying on its wastewater management activities.

The HCP effort was stopped in April 2005 after completion of the first phase. The WTD activities contained in the first-phase analyses included adequate avoidance and minimization measures, but any potential remaining impacts could not be quantified because of the uncertainty of effects of these activities on listed species. Because the commitment of resources required to match the high level of uncertainty was substantial, WTD chose to seek individual ESA Section 7 project consultations instead. All the materials and agreements that were developed in the first phase of the HCP were used in completing the federal permitting processes for the Brightwater facilities, the Carnation Treatment Plant, and other WTD construction projects. In addition, a small portion of the HCP budget was allocated to pursue a Programmatic Biological Assessment (PBA) with the Services for WTD construction activities and reclaimed water uses. These more focused agreements will streamline the ESA consultation process by getting advance approval for the majority of best management practices and methods of construction.

### 11.5.2 Endocrine-Disrupting Chemicals

Endocrine-disrupting chemicals (EDCs) are natural or synthetic chemicals that interfere with or mimic the hormones responsible for growth and development of an organism. Information is continually emerging about these natural and synthetic chemicals that people and industries use every day and dispose of down their drains and toilets. Because the potential impact of EDCs on aquatic life and wildlife is an issue of national and international scope, it is beyond the capability of a local agency or utility to solve alone. Studies will continue for many years before definitive answers are known and regulations adopted.

King County scientists are tracking this issue carefully to keep up-to-date on new findings. The Environmental Laboratory is investigating new analytical methods for the complex testing of some of these chemicals. Sampling for 15 suspected EDCs in King County marine and fresh waters found low levels of five types of EDCs: natural estrogen (estradiol), synthetic estrogen (ethynylestradiol), plasticizers (phthalates), surfactants from soaps (nonylphenol), and epoxy compounds (Bisphenol A).

Conventional secondary wastewater treatment, designed to remove solids and biodegradable organic material from wastewater, removes from 50 to 90 percent of many compounds known to be or suspected of being EDCs. Controlling chemicals at their source is the easiest and least expensive way to protect the environment and people from the harmful effects of all pollutants, including EDCs. WTD will continue its efforts to protect water quality and will adapt its programs, if needed, as more definitive information on EDCs emerges.

For more information, visit the EDC Web site at <http://dnr.metrokc.gov/WTDC/community/edc/>